CONDITION

Graves disease

Graves disease is an autoimmune condition that makes the thyroid produce too much hormone.

WHAT IT IS
Autoimmune condition causing an overactive thyroid

BODY SYSTEM
Hormone system, eyes, heart and circulation

MAIN SYMPTOMS
Fast heartbeat, weight loss, tremor, heat intolerance

WHAT CAUSES IT
Immune system mistakenly stimulates the thyroid

HOW IT IS DIAGNOSED
Thyroid blood tests and thyroid-stimulating antibody testing

MAIN TREATMENT
Antithyroid medicine, radioactive iodine, or thyroid surgery

CAN IT BE CURED?
Sometimes - long-term remission or definitive treatment

IS IT AN EMERGENCY?
Sometimes - fever, confusion, and a very fast heartbeat

LONG-TERM OUTLOOK
Usually manageable with treatment and lifelong thyroid monitoring

Overview

Graves disease is an autoimmune condition and the most common cause of an overactive thyroid, also called hyperthyroidism. In autoimmune conditions, the immune system mistakenly targets part of the body.

The thyroid is a small, butterfly-shaped gland at the front of the neck. It makes hormones that help control heart rate, body temperature, digestion, energy use, muscles, and mood.

In Graves disease, the immune system makes antibodies that act like the signal normally used to control the thyroid. These antibodies keep stimulating the gland, so it produces too much thyroid hormone. This can speed up many body functions.

Graves disease can also cause inflammation around the eyes. This is called thyroid eye disease

or Graves orbitopathy. Less commonly, it causes thickened skin, usually over the shins.

The condition is treatable. Treatment aims to bring thyroid hormone levels into the normal range, control symptoms, and protect the heart, bones, eyes, and general health. The spelling "Grave's disease" is sometimes used, but "Graves disease" is standard.

Symptoms

Symptoms may develop gradually or appear over a shorter period. They can be mild or more noticeable. Older adults sometimes have fewer typical symptoms and may mainly experience tiredness, weight loss, or an abnormal heartbeat.

Possible symptoms include:

Eye symptoms can include dryness, grittiness, redness, watering, light sensitivity, pain, swelling around the eyes, or eyes that appear more prominent. Some people develop double vision. Rarely, swelling can press on the nerve connecting an eye to the brain and threaten sight.

Eye symptoms do not always match thyroid hormone levels. They can begin before, during, or after thyroid overactivity and may continue when blood tests are normal.

- A fast, pounding, or irregular heartbeat
- Feeling hot, sweating more, or struggling with warm weather
- Shaking hands, nervousness, irritability, or trouble sleeping
- Weight loss despite a normal or increased appetite
- Frequent bowel movements
- Muscle weakness and tiredness
- Changes in menstrual periods
- Reduced interest in sex or problems with erections
- An enlarged thyroid, called a goitre

Causes and risk factors

Graves disease develops when the immune system makes thyroid-stimulating antibodies. It is not clear why this happens in one person and not another.

Genes contribute to the risk, so the condition may occur in several members of a family. Inheriting a tendency does not mean that you will definitely develop it.

Other factors linked with a higher chance of Graves disease include:

Large amounts of iodine can trigger or worsen thyroid overactivity in some susceptible people. Iodine may be found in certain supplements, medicines, or medical contrast products. Normal iodine in food is not usually a concern.

Stress may be linked with the onset of symptoms, but it is not considered the sole cause. Graves disease is not caused by something you did, and it is not contagious.

- Having another autoimmune condition
- Pregnancy or the months after giving birth
- Smoking, particularly for thyroid eye disease
- A family history of autoimmune thyroid conditions

Diagnosis

Diagnosis usually starts with blood tests. A thyroid-stimulating hormone, or TSH, test measures the hormone that normally tells the thyroid how hard to work. In Graves disease, TSH is usually low because the body is trying to reduce thyroid activity.

Blood tests also measure thyroid hormones, usually free T4 and sometimes T3. High levels confirm thyroid overactivity.

A test for TSH-receptor antibodies, also called TRAb or thyroid-stimulating immunoglobulins, can support or confirm Graves disease. These are the antibodies that stimulate the thyroid.

If the cause remains uncertain, a radioactive iodine uptake test or thyroid scan may show how actively the gland is taking up iodine. This type of test is not used during pregnancy and is generally avoided while breastfeeding.

An ultrasound is not always needed. It may be used if there is a thyroid lump, an unusually enlarged gland, or another reason to examine the thyroid's structure.

Eye symptoms may require an assessment by an eye specialist. This can include checks of vision, colour vision, eye movement, eyelid closure, and pressure behind the eyes.

Treatment and management

Treatment is chosen according to your thyroid levels, symptoms, age, general health, pregnancy plans, eye condition, and preferences. The main options are antithyroid medicine, radioactive iodine, and surgery.

Antithyroid medicines reduce the thyroid's ability to make hormones. They may be used for a limited course or longer-term treatment. Some people enter remission after stopping them, while others relapse and need further treatment.

These medicines can rarely reduce infection-fighting white blood cells or injure the liver. If you develop a fever or severe sore throat while taking one, seek urgent medical advice and follow the testing instructions provided by your treatment team. Yellow skin or eyes, dark urine, pale stools, or significant abdominal pain also need prompt assessment.

A beta blocker like metoprolol or propranolol may be offered for symptoms such as a fast heartbeat, shaking, or anxiety while thyroid hormone levels come down. It controls these effects but does not treat the underlying thyroid condition.

Radioactive iodine is swallowed and taken up by thyroid cells. It gradually damages enough of the gland to reduce hormone production. Most people later develop an underactive thyroid and need lifelong replacement thyroid hormone. Radioactive iodine can worsen active thyroid eye disease, especially in people who smoke. It is not used during pregnancy or breastfeeding.

Surgery removes most or all of the thyroid. It may be considered when a goitre is large, other treatments are unsuitable, rapid control is needed, or there are concerning thyroid nodules. After complete removal, lifelong thyroid hormone replacement is needed. Important surgical risks include changes to the voice and low calcium levels, so experience in thyroid surgery matters.

Thyroid eye disease may need separate care. Treatment can include lubricating eye drops, help with eyelid closure, medicines that reduce inflammation, or specialist immune treatments. Severe or inactive eye changes may be treated with surgery. Stopping smoking is one of the most useful steps for reducing the risk of eye disease worsening.

Regular blood tests are needed during treatment and after treatment changes. Thyroid hormone needs may also change during pregnancy.

Complications

Untreated or poorly controlled thyroid overactivity places extra strain on the body. Possible complications include:

Thyroid storm is a rare, life-threatening worsening of severe thyroid overactivity. It may be triggered by infection, surgery, childbirth, or suddenly stopping thyroid medicine. Signs can include high fever, a very fast heartbeat, vomiting or diarrhoea, severe agitation, confusion, extreme weakness, or loss of consciousness.

- An irregular heartbeat, particularly atrial fibrillation
- Heart failure in people whose heart cannot manage the extra workload
- Loss of bone strength and a higher risk of fractures
- Muscle loss, weakness, and reduced physical stamina
- Pregnancy complications when thyroid levels are not well controlled
- Persistent or sight-threatening thyroid eye disease

Prevention

There is no reliable way to prevent Graves disease because it results from a combination of immune and genetic factors.

Not smoking can reduce the chance that thyroid eye disease will develop or become more severe. If you smoke, support to stop can improve the likelihood of successful quitting.

Avoid taking high-dose iodine or "thyroid support" supplements unless they have been specifically recommended. Tell healthcare professionals that you have Graves disease before receiving iodine-containing medicines or contrast tests.

Taking treatment as planned and attending blood-test follow-up cannot prevent the condition, but these steps can reduce complications and identify relapse early.

Living with it and what to expect

Thyroid hormone levels usually improve with treatment, but symptom recovery may take time. Heart rate and shaking can settle relatively quickly, while sleep, muscle strength, mood, and energy may take longer.

With antithyroid medicine, some people remain well after treatment ends. Others develop thyroid overactivity again months or years later. New palpitations, heat intolerance, tremor, unexplained weight change, or sleep problems should prompt a routine review and blood test.

Radioactive iodine and surgery usually stop thyroid overactivity permanently by reducing or removing thyroid function. This commonly leads to an underactive thyroid. Daily replacement hormone can provide the hormone the gland no longer makes, but regular blood tests remain important.

Eye disease often has an active inflammatory phase followed by a quieter phase. This process can last months or years and may not follow the thyroid condition exactly. Some changes

settle, while double vision, prominent eyes, or eyelid changes may remain and need specialist treatment.

Weight lost during untreated hyperthyroidism is often regained as hormone levels return to normal. Some people gain more than expected. Balanced eating and gradually increasing activity as symptoms improve may help, but restricting food to maintain an illness-related low weight is not advisable.

Most people can work, exercise, travel, and have families once thyroid levels are stable. Ongoing monitoring is usually needed even after successful treatment because thyroid function can change later.

When to get medical help

Arrange a routine appointment if you develop possible symptoms of an overactive thyroid, such as a persistent fast heartbeat, shaking, heat intolerance, unexplained weight loss, or swelling at the front of the neck.

Contact your treatment team promptly if symptoms return after improving, if you become pregnant or plan a pregnancy, or if you have new eye symptoms. Pregnancy can affect treatment choices and monitoring.

Seek urgent medical care if:

Call emergency services for high fever, confusion, collapse, severe agitation, chest pain, major breathing difficulty, or a very fast heartbeat with severe illness. These symptoms may indicate thyroid storm or a heart complication.

- You develop fever or a severe sore throat while taking antithyroid medicine
- Your skin or eyes turn yellow while taking thyroid medicine
- You have new double vision, worsening eye pain, or cannot close an eye
- Your vision becomes blurred, dim, or less vivid

Common questions

Is Graves disease the same as hyperthyroidism?

No. Hyperthyroidism means the thyroid is making too much hormone. Graves disease is one specific autoimmune cause of hyperthyroidism. Thyroid nodules and thyroid inflammation can also cause high hormone levels.

Can Graves disease go away?

Some people enter long-term remission after antithyroid medicine, but relapse is possible. Radioactive iodine and surgery can permanently stop thyroid overactivity by reducing thyroid function. They do not necessarily remove the underlying autoimmune tendency.

Will I gain weight after treatment?

You may regain weight lost while your thyroid was overactive. Some people gain additional weight as their metabolism returns to normal. Thyroid blood tests can show whether weight change is related to an underactive thyroid after treatment.

Can Graves disease affect my eyes?

Yes, but not everyone develops thyroid eye disease. Symptoms range from dryness and irritation to swelling, double vision, or prominent eyes. Smoking increases the risk and severity. Changes in vision need urgent assessment.

Can I have a healthy pregnancy with Graves disease?

Many people with Graves disease have healthy pregnancies. Good control before and during pregnancy is important because both high and low thyroid hormone levels can cause problems. Treatment may need to change, so contact your care team before trying to conceive or as soon as pregnancy is confirmed.

Is Graves disease contagious?

No. You cannot catch Graves disease from another person or pass it through everyday contact. Family members may share a genetic tendency toward autoimmune thyroid conditions, but this does not mean they will develop Graves disease.

Sources

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